

Continuity and Reliability of Measurements Made at the Cape Verde Atmospheric Observatory (CVAO)

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The CVAO is within a very small class of the World Meteorological Organization/Global Atmospheric Watch long-term observing stations, which measure a comprehensive range of atmospheric parameters. These include meteorological parameters, greenhouse gases, short-lived reactive gas species and aerosols. In this presentation we focus on the trace gas measurements and describe some of the ongoing efforts to ensure accurate, consistent and reliable measurements since the station began operation in October 2006. Standard operating procedures for all the measurements are in place and routine instrumental procedures are carried out by fully trained on-site personnel. Ozone (O_3) measurements are almost always duplicated with the two instruments running in parallel and sharing an inlet. Carbon Monoxide (CO) measurements are almost always in triplicate and by three different methods (VUV Fluorescence, University of York; frequent flask sampling and online measurement by GC-MS, MPI, Jena). O_3 is linked to the primary standard reference photometer #2 (SRP#2) from the National Physical Laboratory (NPL) traceable through the National Institute of Standards and Technology (NIST), and CO to a standard provided by the GAW Central Calibration Laboratory (CCL) at NOAA/ESRL, through regular calibrations. GAW audits are planned for CO, O_3 , and the greenhouse gas species later this year. The CVAO is one of only a handful of observatories (see figure) making non-methane volatile organic compound (NMVOC) measurements and in December 2009 these were audited by the CCL at IMK-IFU, Garmisch-Partenkirchen, Germany, showing that the station measurements were within the accuracy and precision required by GAW. CVAO scientists are also involved in the new GAW expert group for the oxides of Nitrogen (NO_{xy}). Data analyses and Quality Assurance/Quality Control procedures for all measurements have been developed and streamlined since we began operating the site. The data is archived regularly to the British Atmospheric Data Centre (BADC) and to the World Data Centre for Greenhouse Gases (WDCGG).



Figure 1. The Cape Verde Atmospheric Observatory.

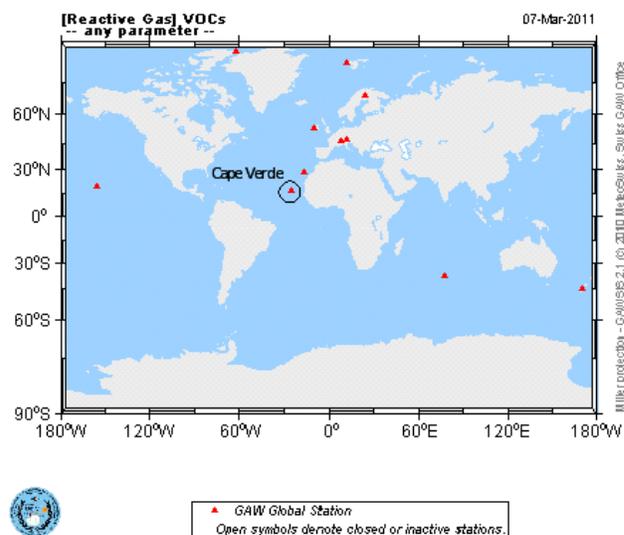


Figure 2. Global Atmospheric Watch GLOBAL sites which routinely make VOC measurements.